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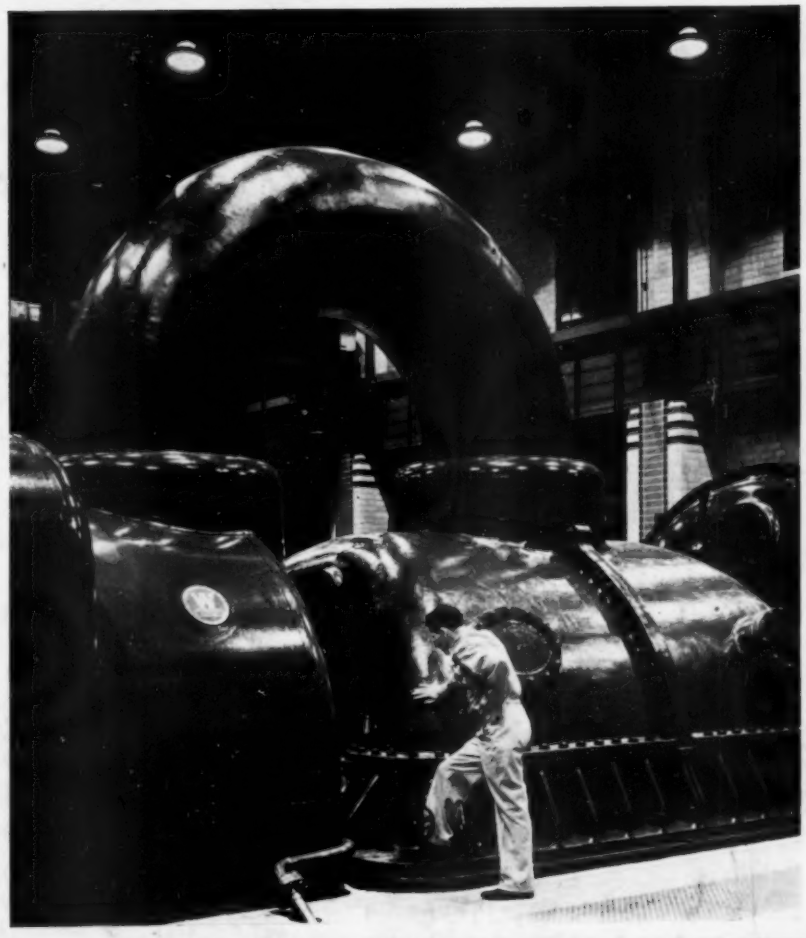
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 14, 1941

Steam Turbine

See Page 376

A SCIENCE SERVICE PUBLICATION

Do You Know?

Soybeans may provide fiber material for automobile upholstery.

Only three states had *cancer control* programs in 1935, but now 16 states have them.

Machine tools produced in the United States this year will have a value of $750,000,000.

Ceylon has 1,100,000 acres of *coconut palms,* believed to be 14% of the world's acreage of these trees.

A *bomb destruction pit* lined with sandbags has been constructed by the Indianapolis police department.

New additions to the *herb garden* of the Metropolitan Museum of Art are wild flax, acanthus, feverfew, and woad.

Storing clothes at temperatures near freezing will not kill *moth larvae,* but the larvae will not feed while at such cold temperatures.

Germany could theoretically get as much *oil* as she wants from coal, says a British scientist, but the process is extravagant and the synthetic plants are highly vulnerable to air attack.

An *ordnance* expert says that military priorities call for airplanes first, vessels second, then machine and anti-aircraft guns and ammunition, then anti-aircraft weapons and fire control, then tanks, and finally combat cars and some large guns.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

AERONAUTICS

How can Army flyers be protected by plastic bubbles? p. 374.

ARCHAEOLOGY

Where are scientists looking for signs of the Wild West of 10,000 years ago? p. 376.

ASTRONOMY

How hot is the sun? p. 374.

ENGINEERING

How can a vacuum cleaner be used to keep a locomotive dry? p. 377.

FORESTRY

Who has been honored as one of the greatest tree planters in the world? p. 373.

LINGUISTICS

Who doubts that Moses was meek? p. 376.

MEDICINE

How can the cost of dried blood plasma be reduced? p. 381.

How is gold being used to treat arthritis? p. 372.

What drug has made possible the complete control of one of the most serious of venereal diseases? p. 371.

What new treatment helps sinus diseases? p. 382.

Which of the sulfa drugs is a remedy against dysentery? p. 376.

Why is there a shortage in medical instruments? p. 379.

MILITARY SCIENCE

What is the range of Uncle Sam's new 155-millimeter guns? p. 378.

PHYSIOLOGY

How is the vitamin biotin linked with cancer? p. 376.

PUBLIC HEALTH

How can liquor be made to carry a warning of the dangers of excess? p. 375.

WILDLIFE

How many bighorn sheep are there in the United States? p. 377.

A young *eel* is so transparent that print may be read through its body.

In the Far North, in *Greenland,* the growing season for plants lasts barely two months in the year.

In a check-up of 101 crippled young people who took vocational *rehabilitation* training to earn a living, 70 were found still employed after two years.

Originated by the U. S. Department of Agriculture, a *strawberry* called the Fairmore is pronounced finer in flavor than the well-known Blakemore.

Outer leaves of California *lettuce*—often discarded by truck gardeners and housewives—are reported to be three times as rich in calcium as inner leaves.

More than half the *tin* used in the United States goes into making cans.

French experiments with *photographic printing* on fabrics are reported thus far successful with cotton only.

Settlement of the boundary dispute between Thailand and French Indochina left the famous *Angkor ruins* in the latter country.

Many of China's children are said to suffer from *vitamin deficiencies,* causing such conditions as night-blindness, rickets, and beri-beri.

A new *varnish* to prevent books from molding in warm, damp places contains turpentine, castor oil, camphor, shellac, ethyl alcohol and mercury bichloride.

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MEDICINE

New Successful Remedies For Six Serious Diseases

Hundred Per Cent Cure of Gonorrhea, Treatments for Arthritis, Rheumatism, Sinus Trouble Announced

Six new successful treatments, promising relief or cure for the suffering of thousands of men and women with serious diseases, were reported at the meetings in Cleveland of the American Medical Association and other medical societies. Hundred per cent control of gonorrhea is made possible by sulfa drug. Crude liver extract is the new remedy for painful gout and arthritis. Salts of gold are being tried secretly on human rheumatism patients. Sex hormone treatment gives new hope for those with cancer of prostate gland. Iodized oil helps sinus disease, and X-rays are advised for Hodgkin's disease. Reports by Jane Stafford, Science Service Medical Writer follow here and appear also on page 379.

Conquest of Gonorrhea

COMPLETE control of gonorrhea, most widespread venereal disease, is promised by a new treatment which cures in 100% of the cases, Dr. William Bromme, of Detroit, declared at the meeting in Cleveland of the American Medical Association.

Complete cures in three days of one hundred out of one hundred men were achieved by sulfathiazole treatment, Dr. Bromme reported. Large doses of the drug, averaging 60 grains a day, continued in the same dosage for 48 hours after the patient is apparently cured, are the secret of how to achieve real cures of this dangerous and often crippling disease, he said.

The patients in his series were crane operators, foundrymen and others employed in heavy industries. None of them lost a single day from work while taking the treatment. The sulfathiazole is given by mouth. Mild nausea in 23 patients and fever of 100.6 degrees Fahrenheit, not enough for most persons to know they had fever, in six patients, were the only reactions to the drug.

Large doses of the sulfa drugs at the start of treatment should be used not only for gonorrhea but for meningitis, pneumonia and streptococcus infections, Dr. Bromme believes on the basis of his experience. Fewer reactions and more effective cures will result from such doses than from the customary small, often-repeated doses, he predicted.

The small, often-repeated doses, which many doctors have used on a cautious, start-in-gently basis, provide a chance for the patient to become sensitized to the drug, with resulting untoward symptoms requiring stopping of the drug. They also give the germs a chance to become used to it, so that it does not affect them.

This is the basis of the "sulfanilamide resistance," he thinks, which has been reported as a cause of failure of the sulfa drugs in some cases in which patients did not get well even after long treatment. Thirty-six of Dr. Bromme's patients had previously been given sulfanilamide without result, but they all got well at the same time and with the same amount of sulfathiazole as patients who had never had sulfanilamide.

All previous methods of treating gonorrhea have failed, Dr. Bromme stated, because the drugs used could not get at the germs. It has been a common medical mistake, he said, to suppose that gonorrhea germs stayed on the surface of the infected area long enough for medicines applied to surface areas to reach the germs. It takes only a few hours, he said, for the gonococcus to get below the surface to the deeper tissues where it lives.

Sulfathiazole succeeds in killing the gonococci where other drugs have failed because it also gets below the surface. This same situation explains the failure of attempts at chemical prophylaxis of gonorrhea, Dr. Bromme believes. The disease had developed in 36 of his patients despite the use of various commercial prophylactics.

The prompt, complete cures of gonorrhea possible with adequate sulfathiazole treatment will lead to the disappearance of the crippling caused by gon-

"BLACK TERN NO. 2"

This beautiful photograph by William I. Holzmark, of University City, Mo., won first prize in the bird class in the Third Annual Salon of Nature Photography conducted by Hobbies, the magazine of the Buffalo Museum of Science. It is on exhibit in the museum during June.

orrhea. Dr. Bromme predicted that within 20 years there will not be a case of gonorrheal crippling or other complication to demonstrate to medical students.

Science News Letter, June 14, 1941

Liver for Gout

EXCELLENT results in treating gout and arthritis sufferers with crude liver extract was announced by Dr. John Staige Davis, Jr., of New York, to the American Rheumatism Association.

Concentrated liver extracts, such as are used for treatment of pernicious anemia, did not give such good results.

Among the 46 patients treated, one was a 49-year-old woman with pernicious anemia and rheumatoid arthritis whose arthritis grew steadily worse during the five years she was given concentrated liver extract for the pernicious anemia. On Oct. 20 when the less concentrated liver extract was started she was practically bed-ridden. On November 20 she walked into the doctor's office without a cane and by Dec. 25 she was able to knit a pair of gloves.

Another patient had gout for 20 years and no treatment was of any value until the less concentrated liver extract was given. Now she remains well and able to work on a small weekly dose.

One patient was unable to take alcohol unless he had been given the liver treatment. On one occasion after a week of this treatment he drank 16 Scotch and sodas in 24 hours without ill effect.

The 21 patients on whom Dr. Davis reported suffered from various blood disorders, such as pernicious anemia. The improvement of the gout when less concentrated liver extract was given led to use of this treatment in another 25 cases of gout, all of whom were helped.

The fact that this liver treatment clears up the gout and arthritis symptoms supports the theory that the liver is in some way associated with rheumatic disease. Dr. Davis believes that the liver disorder in rheumatic or gouty patients is probably one of an underfunctioning liver which fails to produce some of the substances contained in the crude liver extracts, but absent in the concentrated and more refined extracts usually given for pernicious anemia.

Science News Letter, June 14, 1941

Gold for Arthritis

A GOLD compound, called calcium aurothiomalate, is the new and promising treatment for arthritis, which grandpa calls rheumatism, now being given carefully controlled trials at the University of Cincinnati.

Results of these trials on patients will not be ready to publish for some months yet, but successful trial of the new remedy on an experimentally produced progressive, chronic arthritis in mice was announced by Dr. Albert B. Sabin and Dr. Joel Warren.

Gold salts have been used for some time in Europe in treatment of arthritis, but the danger of poisoning has been so great with most of the gold salts that American physicians have hesitated to give them to patients.

Chemical and biological studies showed, Dr. Sabin reported, that gold salts must be in colloidal form to be effective as a remedy and that their safety for mice depended on their being insoluble. With these facts as guide, the new compound, calcium aurothiomalate, was made and tested. It has a margin of safety for mice at least one hundred times greater than any other gold compound tested, and gives a complete and persistent cure of the arthritis when given early in the disease in an effective dosage. Monkeys weighing five or six pounds survived twice the dose of the remedy used for a 150-pound man.

The new compound was not effective if given to mice so late in the disease that extensive amounts of cartilage around the joints were destroyed. Other arthritis remedies tested for comparison, including sodium salicylate and sulfapyridine and sulfathiazol, were ineffective in the mouse arthritis.

Because the new remedy may not be as safe and effective for human patients as for mice, Dr. Sabin emphasized that it will not be available until the results of the trials now being made are known, nor would he disclose where these trials are being made.

Science News Letter, June 14, 1941

Sex Hormone Treatment

LIVES of thousands of men suffering from cancer may be saved for years of health and useful work by a new sex hormone treatment announced by Dr. Charles Huggins, Dr. George Gomori, Dr. C. V. Hodges and Dr. W. W. Scott, of the University of Chicago.

The treatment brought spectacular benefit in 80% of cases of cancer of the prostate gland, which is one of the commonest and most hopeless types. The treatment is not a "cure," Dr. Huggins said, because it does not kill the cancer cells, but it stops the malignant activity of the cancer cells in the prostate gland and of those that have spread from there into the bones, and shrinks the size of the cancers. The 21 patients reported on were beyond hope of benefit from operation to remove the cancer when the new treatment was started two years ago, as are most patients with this type of cancer when first seen by physicians. Today, 17 of the 21 are alive, although they would ordinarily have been expected to live only half this long even with the aid of radium or X-ray treatments. Of the four who died, only one died of cancer, the others dying of apoplexy or heart failure.

The successfully treated patients have gained from 40 to 80 pounds each, their red blood cells have increased from an anemic two million to a healthy five million, they are free of the pain which was so severe as to require constant morphine, they have hearty appetites, demanding "seconds" at every meal, instead of the cancer patient's typically poor appetite, and they have been able to get out of bed and go back to work.

This striking benefit has been confirmed by a new blood test for prostate gland cancer which shows in terms that can be expressed in "cold figures" that the cancerous activity was stopped.

Cancer of the prostate gland, contrary to previous ideas, is not an overgrowth of primitive, embryonic cells, the Chicago scientists have discovered. They have proved that it is an overgrowth of adult cells of the kind that form skin and other epithelial tissues. This kind of cancer, both in the prostate gland and where it has spread into bones, can be inhibited by reducing the amount of male sex hormones in the body or by decreasing the activity of the male sex hormones. This can be accomplished either by castration or by doses of synthetic female sex hormones.

This treatment for human cancer patients results from research on animals which won for Dr. Huggins and his associates the A.M.A. gold medal award for original research last year.

The test which gives objective proof of the success of the treatment is made by measuring the amount of an enzyme called "acid" phosphatase, in the blood. No one knows the function of this enzyme, although an "alkaline" phosphatase is made by the bones to help them get phosphorus from phosphates for building new bone tissue. The "acid" phosphatase is found in large amounts in adult prostate glands, but when the amount in the blood rises above ten units, it signifies cancer in the gland. When the male sex hormone activity

has been reduced, the "acid" phosphatase in the blood drops to the normal amount. At the same time, the "alkaline" phosphatase increases, indicating healthy, cancer-inhibiting activity of the bones. When the cancer that has spread to the bones has been checked, this "alkaline" phosphatase also returns to normal.

Science News Letter, June 14, 1941

Iodized Oil Helps Sinus

SUCCESS with iodized oil treatment of sinus disease, in some cases with only two treatments, was announced by Dr. Henry M. Goodyear, of Cincinnati.

The iodized oil is injected into the sinuses, and is helpful even after irrigation which is sometimes necessary in acute cases, Dr. Goodyear reported. He started to use it after patients who had had the injection previous to X-ray pictures, in which the oil was used to make the sinuses opaque so they will show on the X-ray film, reported their sinus trouble was better.

Science News Letter, June 14, 1941

Advises X-Ray Treatment

PATIENTS with Hodgkin's disease, a condition marked by inflammatory enlargement of the lymph glands, for which no cure is known, can be given much comfort, freedom from pain, and a somewhat longer lease on life by X-ray or radium treatment, Dr. Ovid O. Meyer, of Madison, Wisconsin, declared.

The treatment is not a cure but saves the victims of this fatal ailment many months of invalidism, he explained. One woman gave birth to two children while she was ill without any demonstrable effect on the illness. She lived 45 months, which is as long as the average. A 14-year-old boy, bedridden last November, left the hospital in December and by April was walking without crutches and has gained 37 pounds.

Science News Letter, June 14, 1941

● RADIO

J. A. Hyslop, principal entomologist in charge, Division of Insects and Pests, U. S. Department of Agriculture, will describe some of the greatest insect pests of today as guest scientist on "Adventures in Science," with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, June 19, 3:45 p.m. EDST, 2:45 EST, 1:45 CST, 12:45 MST and 11:45 a.m. PST. Listen in on your local station. Listen in each Thursday.

GROWER OF EUCALYPTS

Dr. Edmundo Navarro de Andrade (left), with Robert C. Cook of the American Genetic Association, from which organization Dr. Navarro received the Meyer Medal in recognition of his lifetime of work in promoting the cultivation of eucalyptus trees in Brazil.

FORESTRY

Honor Brazilian Botanist for Millions of Eucalyptus Trees

Since 1903, He Has Grown More than 130 Species In Brazil, Trying to Find Which Will Give Best Yield

ONE of the greatest tree planters in the world, Dr. Edmundo Navarro de Andrade, who has devoted his life to the development of eucalyptus tree cultivation in Brazil, recently received the Meyer Medal for distinguished services in plant introduction. This medal was founded by the American Genetic Association. Presentation was made at the Plant Introduction Station of the U. S. Department of Agriculture at Glendale, Md.

The eucalyptus, native to Australia, thrives well in Brazil, and Dr. Navarro's researches have been devoted to finding which of its many species will grow best and furnish largest returns in wood in the shortest time. He has grown more than 130 species of eucalyptus in Brazil, and from them has made his selection of the ones found most economically profitable. In the single Brazilian state of Sao Paulo there are now more than 100 million of the trees, in forests covering nearly 500 square miles. Elsewhere in Brazil there are probably another 100 million eucalyptus trees.

In the course of his search for the best trees for Brazilian conditions, Dr. Navarro has travelled all over the earth, for eucalyptus is cultivated in many lands outside of Australia. The present is his fifth trip to the United States. California has extensive plantings. Some of the most successful introductions into the republic are from seeds borne by these emigrant trees, rather than directly from Australian forests.

Dr. Navarro, who has been at work on the project since 1903, was impelled in the first instance by the fuel needs of one of Brazil's most important railroads. Coal in Brazil is scarce and of poor quality, and wood is the common railroad fuel. The forests along the line of the Paulista Railroad were being rapidly depleted, and the president of that company, Antonio Prado, foresightedly called Dr. Navarro into conference on the situation. The botanist

felt that eucalyptus held most promise for the production of a quick-growing firewood crop on the warm, moderately dry uplands of Sao Paulo, and undertook what has turned out to be a lifetime of research on this one subject.

In the course of his work he has had to encounter much opposition, which has frequently taken a fiercely emotional turn. However, he has at all times had the unwavering support of President Prado of the Paulista Railroad Company, and now sees his long efforts crowned with full vindication.

Science News Letter, June 14, 1941

ASTRONOMY

Million Degree Temperatures Near the Surface of Sun

Theory of Harvard Astronomer, Based on Discovery By Swedish Scientist, Indicates Present Values Wrong

TEMPERATURES of millions of degrees prevail just above the surface of the sun, instead of the 10,000 degrees that astronomers have previously measured, if the theory proposed by Dr. Donald H. Menzel, of the Harvard College Observatory, is correct.

At a Harvard conference on the sun and solar-terrestrial relationships, he said that his ideas follow from recent discovery made by Dr. Bengt Edlén, of the University of Upsala in Sweden. This explained the origin of the previously mysterious lines in the spectrum of the sun's corona, its outermost envelope.

They are actually caused, he has found, by elements such as iron, calcium and nickel, from the atoms of which a great many outermost electrons have been torn off. Of the 26 outer electrons in the iron atom, as many as 13 are removed, Dr. Edlén found. He was able to imitate the effects in the laboratory by battering atoms with powerful electric sparks.

Measurements of the surface temperature of the sun, based on the light of the ordinary colors that comes to us, have given a value of about 10,000 degrees Fahrenheit. But, Dr. Menzel said, such an extremely low value would not fit in with the new theory, conditions of excitation must be far greater than this—around several millions of degrees—in the innermost parts of the corona. In spectrum photographs which he made at recent eclipses the outer part of the corona shows lines, but that of the part nearest the sun's surface is a continuous band of color. This indicates that atoms in this region are broken up on account of the high temperatures, and do not show usual lines.

"Perhaps the sun has sprung a leak," he said, "and these hot gases stream out from the sun's interior through holes and pores."

It might seem, Dr. Menzel suggested, that these gases, encountering lower pressures as they emerged, would expand, and the expansion would produce a great cooling. But, he speculated, it might be that great whirlpools inside the sun expand the gases before they are ejected. In that case they would still be as hot as the interior even after they were outside. This theory, he said, is preferable to others which might be offered in explanation.

Apparently the inner corona is the birthplace of the prominences, great flame-like clouds of gas which can be seen and photographed with proper instruments. Dr. Menzel announced that his associate, Walter Roberts, who is in charge of the special Harvard Observatory at Climax, Col., for studying the sun's corona from an altitude of 11,500 feet, actually saw this happen. A flare in the corona, in which he detected the characteristic green spectrum line, condensed into a prominence, and extended down to the solar surface.

Similar formation of prominences above the sun's surface, apparently out of nothing, have been filmed in astronomical motion pictures taken at the McMath-Hulbert Observatory of the University of Michigan.

Dr. Robert R. McMath, Director of the Observatory, showed some of these to the meeting. According to Dr. Menzel, this may be due to the atoms recombining. Torn apart, they do not give ordinary light, and are not detected, but as they cool and their parts come together again, they give the familiar spectrum, and then are visible.

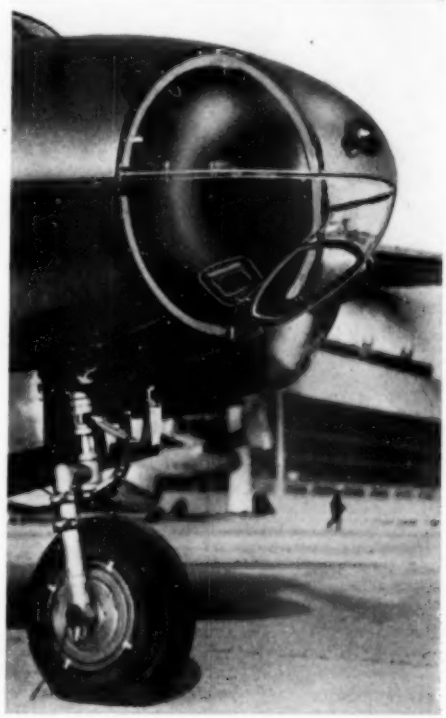
AERONAUTICS

Plastic Bubbles To Protect Flyers From 400-Mile Gale

WITH plastic bubbles made from such opaque materials as coal and oil, more transparent than glass as well as lighter and stronger, bombardiers and gunners on American bombing planes are protected from a gale that would tear off their clothes if they were exposed to its fury.

In the first World War, goggles supplied the necessary protection to a gunner, who could stand in his cockpit without great difficulty. But that was when 100 miles an hour was considered fast. New planes are making 400 miles per hour, and even more, so adequate enclosures are a vital necessity. To give complete visibility, and avoid blind spots in which an enemy plane might sneak in unobserved, they must be transparent.

The plastic shells, which are being made in Philadelphia for both U. S. and British planes, are formed by drawing heated sheets, then soft and pliable, over cloth-covered molds. They are clamped in position, and, when cool, they hold their shape in tropical heat or Arctic



PLASTIC NOSE

Inside this transparent plastic nose of a Martin B-26 bomber, the bombardier, at his bomb-sight, will aim the explosive eggs as they are laid.

FOR BOMBER

This bubble-like dome of transparent plastic is undergoing its final polishing in the Rohm and Haas factory. Later it will form the rear gun turret of a bombing plane. Resembling an astronomical observatory dome, it is designed to permit the swinging of the machine guns in any direction. To the left is the transparent nose of a bomber, made of the same material.

cold. They can be trimmed with a saw.

Another advantage is their lightness. Weighing 45 per cent of a corresponding glass structure, the saving, in a plane like the Martin B-26, which has a plastic nose, rear-gun-turret, observer's dome, tail empennage and four fuselage windows, is enough to permit another bomb to "ride free."

Science News Letter, June 14, 1941

PUBLIC HEALTH

Doctors Urge Change In Liquor Sales Methods

Propose Warning Label for Every Bottle of Liquor Advising Moderation and Accompanying Vitamins

THE sale of alcoholic beverages should be made to conform to the federal Food, Drug and Cosmetic Act, by putting a warning label on every bottle, Dr. Leo Alexander, Dr. Merrill Moore and Dr. Abraham Myerson, of Washingtonian Hospital, Boston, declared before the American Medical Association meeting in Cleveland.

The medical profession, realizing fully that "alcoholism is the greatest single public health problem related to any drug," and already strongly supporting the federal Food and Drug Administration "in its general operations and in its special task of protecting public health from intoxication and mental derangement following or associated with the use of any drug" should "firmly and uncompromisingly act" on this problem, the Boston doctors urged.

They stress that they are not prohibitionists and regard prohibition as a failure and obstructive to the real goal of temperance.

Alcohol is both a food and a drug under the definitions of the present Food, Drug and Cosmetic Act, the Boston doctors pointed out, citing legal opinion.

"If the Federal Food, Drug and Cosmetic Act is designed to prevent, and to protect the American public and its health from the menace of drug intoxication and addiction, then it should apply to alcohol as its first drug of choice instead of neglecting and ignoring it altogether," they declare, adding "If one placed in a heap all the wreckage of human lives produced by the habit-formation implied in morphinism, cocainism, barbiturate addiction, and all the narcotic and hypnotic drugs put together, and if one were to balance against them all the habit-formation of disastrous type subsumed under the term alcoholism, the scale would shift immediately and unmistakably towards alcoholism."

They urge that the Food and Drug Administration require alcoholic beverages to carry a warning label just as this type of label is required by law for other dangerous and habit-forming drugs. They propose the following label:

"Directions For Use: Use moderately and not on successive days. Eat well while drinking and, if necessary, supplement food by vitamin tablets while drinking. WARNING: May be habit-forming; not for use by children. If this beverage is indulged in immoderately it may cause intoxication (drunkenness), later neuralgia and paralysis (neuritis) and serious mental derangement, such as delirium tremens and other curable and incurable mental diseases, as well as kidney and liver damage."

"A sensible warning label will probably exert a wholesome influence upon the attitude of the community," the physician said. "At present only those who want to be enlightened can be reached by any educational program, and we can think of no better vehicle for carrying education to those who need it most than the label of the liquor bottle itself.

"There are many people who are afraid to take two aspirins at once for a cold, because of its possible effect on the heart. However, these people do not hesitate at all to take six high-balls in a row.

"We think this paradoxical discrepancy in public opinion and knowledge should be corrected."

Science News Letter, June 14, 1941

According to the *1940 Census* the United States has over 5,000,000 people who have passed three score years and ten.

Iraq's oil field is sometimes described as the largest single oil field in the world.

PHYSIOLOGY

Cancerous Tissues High In Content of Biotin

A NEW characteristic of cancerous tissues, high content of biotin or vitamin H, has been discovered by Dr. Philip M. West and Dr. William H. Woglom of Columbia University College of Physicians and Surgeons. (*Science*, May 30.)

Biotin is a vitamin whose role is not well understood at present, but it has been found in so many kinds of living cells that it is assumed by many biologists to be a necessary concomitant of all living substance. It is especially abundant in embryonic tissue. The discovery of its abundance in tumorous growths fits in well with other resemblances between these unhealthy proliferations and rapidly growing normal embryonic tissues.

Science News Letter, June 14, 1941

ARCHAEOLOGY

To Explore Home Life of West 10,000 Years Ago

SCIENCE is about to open a new page of prehistoric American home life. A camp site near San Jon, New Mexico, where America's 10,000-year-old (at least) Yuma hunters gathered when the West was really wild, is to be the scene of a digging expedition by Dr. Frank H. H. Roberts, Jr., Smithsonian Institution archaeologist.

Dr. Roberts, who explored a Folsom hunters' camp ground in Colorado, and found out many details of home life in America as it was 25,000 years ago, explains that the Yuma type of early American appears to follow along closely after the Folsom hunters in the dim and shadowy past.

Both the Yuma and Folsom hunters are missing men, whose physical appearance is still a mystery to archaeologists. It is mainly from their typical stone dart points that archaeologists have deduced their presence in early America, and trailed them over a wide area of the country. Some of the darts pierced such big game as camels, giant bison, mammoths, and other animals of the American scene that died out near the end of the Ice Age. Yuma hunting weapons were thicker and stubbier than Folsom, but both kinds got their game, Dr. Roberts states.

That the camp site in New Mexico will clear up details of how Yuma hunters lived—and whether they were more progressive than Folsom hunters—is the hope of Dr. Roberts. University of New Mexico archaeologists have already made a preliminary investigation of the site. A local cowboy's discovery of the curious Yuma projectile points, some years ago, first called attention of scientists to the place.

In Yuma man's lifetime, shortly after the last great ice sheet retreated north, the site was a lake-side camp, but the lake has long since dried. Hope of finding much information about the mysterious Yuma men, and women, of ancient America by digging at this camp is based on such evidence as the quantity of stone points already found there and the masses of animal bones, indicating that groups of primitives came year after year to hunt, make tools, and camp awhile.

Science News Letter, June 14, 1941

MEDICINE

Sulfa Drug Available for Fight Against Dysentery

SULFAGUANIDINE, new sulfa drug that is proving a potent and swift remedy for bacillary dysentery and a life-saving aid in operations on the lower alimentary tract, will be available to physicians generally, it was announced.

Sulfaguanidine was developed by Prof. E. K. Marshall, of the Johns Hopkins Medical School, in a search for a better sulfa drug than those already available for fighting pneumonia and streptococcus infections. The peculiar property of sulfaguanidine of remaining largely in the lower alimentary canal when given by mouth, instead of being rapidly absorbed by the blood, led to its extensive trial as a remedy for infections of this part of the body, such as bacillary dysentery.

Infections with other germs in this part of the body are a great and heretofore unavoidable hazard in operations for the removal of cancer or correction of other serious disorders of the lower alimentary canal. Shortly after the discovery of sulfaguanidine's action, therefore, Dr. Warfield M. Firor, acting chief surgeon of the Johns Hopkins Hospital and acting professor of surgery at Johns Hopkins Medical School, tried it as a weapon against infection in such operations. Remarkable success with the use of the drug before and after such operations has now been reported.

Sulfaguanidine is made by the Calco Chemical Division of the American Cyanamid Company and will be made available to the medical profession through Lederle Laboratories, Incorporated.

Science News Letter, June 14, 1941

IN SCIENC

ENGINEERING

Power for Defense Provided by Turbine

See Front Cover

IMPORTANT for essential defense industries is a plentiful source of electrical power. Shown on the cover of this issue of the SCIENCE NEWS LETTER, is a modern Westinghouse steam turbine. Despite its compactness, this one, turning 3600 times a minute, is able to drive a generator which produces 35,000 kilowatts of power.

Science News Letter, June 14, 1941

INVENTION

Warning for Motorists When Tires Need Air

MOTORISTS are warned when their tires need air with a new deflation indicator. One is attached to each tire, and when the air pressure falls below the standards, a red signal light flashes on the dashboard. In case the driver doesn't notice it, an audible signal gives a further warning. Operated electrically from the car battery, it does not operate when the vehicle is not in use. It can be used as well in trucks, trailers, airplanes, and any vehicle with pneumatic tires.

Science News Letter, June 14, 1941

LINGUISTICS

Meekness of Moses Doubted by Scholar

MOSES' Bible reputation for being the meekest man on earth is probably not justified. He was harassed, not meek, says Prof. O. R. Sellers of the Presbyterian Theological Seminary.

Proverbial meekness of the Israelite leader who stood bravely before Pharaoh, rests almost entirely on a dubious, though ancient interpretation of one Bible verse, Numbers 12, verse three, he pointed out. In the verse, which says, "Now the man Moses was very meek, above all the men which were upon the face of the earth," the Hebrew word translated as meek could just as well be taken to mean vexed or harassed, Prof. Sellers explained.

Science News Letter, June 14, 1941

NCE FIELDS

ENGINEERING

Vacuum Cleaner Keeps Locomotive Dry

A STANDARD vacuum cleaner had a novel use recently, when it served as an air compressor to keep water out of the motors of an electric locomotive. The locomotive was used in a tunnel through which water was flowing. Even with the motors raised, there was trouble with water entering. Since no air compressor was available, an ordinary vacuum cleaner was applied to give positive pressure inside the motor. This counteracted the flow of the water and kept the motors dry. (*General Electric.*)

Science News Letter, June 14, 1941

MEDICINE

Insuring Stout-Hearted Soldiers Requires Care

INSURING stout-hearted soldiers for Uncle Sam and protecting his purse against some of the costly mistakes of past wars requires care in both examination and early training of recruits, Dr. Eugene S. Kilgore, of San Francisco, warned at the meeting of the American Heart Association in Cleveland.

Use of the electrocardiograph and other similar diagnostic aids will help to prevent mistaken diagnosis of heart disease on the basis of certain symptoms which mask as heart trouble.

Those who have what is known as effort syndrome, in which rapid heart beat, giddiness, shortness of breath and heart consciousness are symptoms, are generally worrisome men with little stamina who, even though their hearts may be essentially sound, are likely to break down under the strain of military duty and join the rolls of disabled and pensioned veterans.

Suggesting to a recruit that his heart may not be normal might frighten him into a condition where he is not fit for duty, so Dr. Kilgore warned medical examiners to be sure of their diagnosis before telling the examinee he has heart trouble.

Building up the recruit's physical condition with plenty of rest and good food while protecting him from too strenuous physical activity during the early days of service before he has acquired the requisite physical strength may help, Dr. Kilgore suggested, to prevent many recruits from developing this effort syndrome which is perhaps as much a nervous as a heart ailment.

Science News Letter, June 14, 1941

WILDLIFE

Only 14,000 Bighorn Sheep Left in United States

BIGHORN sheep, like the remnants of an army that has retreated into the mountains, are making their last stand in the West. There are only about 14,000 of them left, the U. S. Fish and Wildlife Service reports. They are scattered through 12 states.

There are two kinds of these animals. The Rocky Mountain bighorn count totals approximately 8,350, with heaviest populations in Wyoming, Colorado and Idaho. There are some 5,350 desert bighorns, centered mainly in California, Nevada and Arizona.

In addition, there is an animal in Alaska, known as the Dall mountain sheep, numbering perhaps 40,000 specimens. However, some zoologists claim that this animal is not a true bighorn.

Bighorns are zealously guarded now, with strict laws against hunting, and a number of sanctuaries administered by the Fish and Wildlife Service. They also receive protection in a number of National Forests and in the National Parks where they occur. The Boulder Canyon National Wildlife Refuge in Nevada and Arizona, although primarily a wildfowl area, has a considerable herd—more than 350 of the animals.

Science News Letter, June 14, 1941

ENGINEERING

New Instrument for The Hard of Hearing

A NEW instrument for the hard of hearing uses in miniature vacuum tubes and essential circuits found in the most advanced broadcasting stations. Not only can it amplify sound far above normal intensity, but it can also amplify different portions of the sound spectrum by different degrees. It also gives the user control in noisy places against certain noises which might be amplified, and would destroy the intelligibility of speech. (*Western Electric.*)

Science News Letter, June 14, 1941

ANTHROPOLOGY

American Scientist First to Measure Famed Mummies

ANCIENT Peru's most famous and dignified mummies, old men with deformed super-high-brow heads and bundled in fat layers of gorgeous robes, have been measured as bare bones for the first time, for science.

Returning from Lima, Peru, where he examined physical traits of these prehistoric Indians, Dr. T. Dale Stewart of the Smithsonian Institution says that the curious custom of tightly binding the head in childhood deformed every skull he studied. Every one was an old man, indicating that an entire cemetery where 400 richly decked mummies were unearthed was a priestly burying place.

Recovering hundreds of mummies from the sands of Paracas, southern Peru, has been the work of Dr. Julio Tello, noted Peruvian archaeologist. The finds, famed internationally for ten years, hold court in a museum at Lima, where Dr. Tello displays beautifully woven and embroidered wrappings and studies this culture of Peru, that flourished nobody knows exactly how many centuries prior to 1000 A.D.

The peculiar head-binding custom of Paracas makes it hard for an anthropologist to discover what the normal facial measurements of the head type of these people were, Dr. Stewart explains. He has measured various body and head bones, and brought back to this country fragments of the mummified skin and the hair for special tests. Knowing more about the appearance and type of these ancient Indians will help in clearing up the mystery of their relationship to other ancient Peruvian peoples, and their role in South America's prehistory.

That these Indians practised an extraordinary and mysterious type of surgical operation is shown by 30 or more skulls examined by Dr. Stewart. It is well known that ancient Peruvians cut small holes in the skull which released pressure and that patients often survived this delicate operation. But this operation consisted of scraping away all but a thin inner table of skull bone, until as much as a third of the skull top was removed, even a six-inch-long piece.

It is hard to believe anything so radical was attempted during life, says Dr. Stewart, or that a patient could have survived, if it were tried. Both Dr. Tello and Dr. Stewart believe that it was done after death. But "Why?" is the mystery.

Science News Letter, June 14, 1941

MILITARY SCIENCE

Hard Hitters for U. S.

New 155-Millimeter Heavy Field Guns Can "Shoot All Over the County" From One Position; Fast on Road

By DR. FRANK THONE

BLITZKRIEG'S rapid lunges, parries and counterthrusts have thus far so dominated the stage of war that we are in some danger of losing track of the fact that effective fighting can be done with other things than airplanes and tanks. Though much modified by changed conditions, the infantry, the cavalry and above all the artillery are still very much with us.

Nor are War Department heads in Washington forgetting this for a moment. Through all the straining effort to build planes, planes, ever more planes, and to turn out more and bigger and faster tanks, there rings the deeper clang of the forges where the great guns are made. War is like winter in one respect: if you want to get through it in reasonably good shape, you've got to bring your "heavies" along.

Important item in America's defense effort is the production of sufficient numbers of the heavy field piece adopted as standard equipment for the Army after years of experimentation. It is a brand-new design from the ground up, and our ordnance men are entitled to a certain amount of pride in their handiwork.

Two Kinds of Guns Needed

Artillery needs two kinds of guns, for its main work. The great majority of the pieces are supposed to be of the light variety, throwing shells weighing 12 to 25 pounds or so, very rapidly and in large numbers. To back them up, a smaller number of heavier pieces are needed, with projectiles of about 100 pounds' weight. These provide the "Sunday punch," reaching over into back areas, messing up roads, smashing supply accumulations, attacking the enemy's light batteries.

That is the job taken over by our new 155-millimeter rifles. With a caliber of about six inches, they can hurl 95-pound shells to an extreme range of over 15 miles. Set up in the middle of an average Eastern or Midwestern county, one of these weapons could demolish any crossroad, any railroad switch, anything else in it considered worth shooting at, without once moving from the spot.

This length of range is a great advantage in a gun. In the World War, infantry could go forward just as far as the artillery barrage would precede them, and no farther. The limited range of the guns of that day had much to do with the bogging down of many a promising break-through. Modern artillery has double the ranges known in 1918.

Accuracy has been vastly increased, too, due to the establishment of a far steadier firing platform in the new pieces. Instead of standing on a three-point support provided by two wheels and the end of the trail, the new gun carriage is lowered off its wheels until it sits solidly on the ground, with the two halves of its split trail thrust out behind it, bracing it like a pair of spraddled legs.

Thus set up, the gun can swing clear around and fire at any point in a complete circle. If the British had had guns of this type of carriage at the siege of Tobruk, they could have fired either to seaward or at their enemies on land, merely by pivoting around on their fixed stand. The amount of backbreaking labor thus spared the cannoneers is an important item in itself. Serving a gun is hard enough work, without forever having to pick up its heavy trail to train it on a new target.

But when the big rifle does get ready for the road, it can move fast. With its main weight supported on two massive double-wheeled axles, and a third pair of wheels supporting the end of the trail, it travels on ten thick, bulletproof rubber tires. It can be hauled behind a tractor, or hitched to a heavy truck for more rapid movement. It has air brakes, making it a much more controllable towing load. It has been taken over average roads at speeds up to 55 miles an hour.

The same carriage can be used to mount an even heavier-calibered weapon, an eight-inch howitzer capable of firing 345-pound projectiles to a range of 17,000 yards, or nearly ten miles. When any really heavy smashing is called for, this howitzer would come into play. Anything above this caliber carries one into the domain of railway artillery.

SPEED WITH POWER

"Rollin' Along" on ten huge rubber tires, the new 155-millimeter field piece in march order

INSPECTION

Shells for the 155's, undergoing inspection in an Army ammunition magazine.

One thing ordnance men very carefully took into calculation in designing the new carriage, and weapons that ride into action on it, was highway conditions. This American gun was planned for American roads. Massive as it looks, its total weight is no more than 15 tons, and its width no greater than that of most of the heavy trucks and cross-country busses that now ply our highway system. It can therefore get about on any halfway decent two-lane road, and cross any bridge that a loaded commercial truck can cross.

The only criticism that has been offered against the new heavy rifle is that it rides rather high on its carriage—looks a trifle top-heavy. This was unavoidable, however, in designing for high-angle fire to achieve its tremendously long range, and for its unique ability to swing clear around in a circle without moving its trail. The price seemed worth paying; and thus far there has been very little difficulty in getting the batteries around during maneuvers in the field.

Big problem now, as in all the rest of our defense program, is to get enough of both guns and ammunition. The Army is reticent about the number they already have; they only say they want more. But no commanding officer of artillery has ever yet admitted that he had a sufficiency of heavy pieces.

Science News Letter, June 14, 1941

MEDICINE

Quota System Is Advised For Military Doctors

Plan Would Not Draft Medical Students or Internes, And Would Limit Volunteering So As to Protect Public

A THREE-POINT program to insure enough doctors for the nation's military and civilian needs and to avoid any bottleneck in the production of doctors and a stern warning to nurses that they are losing their place in the community was presented by Dr. Frank H. Lahey, of Boston, president of the American Medical Association, at the meeting in Cleveland.

Point 1 in his program: Medical students and internes should not only not be drafted for army service but, as in England now, should not even be permitted to volunteer.

Point 2: Those definitely committed to the study of medicine and already in the premedical preparation period should not be drafted but permitted to continue through the medical course.

Point 3: Development of a quota system for selection of doctors for military medical service, such as has already been worked out in England.

"There has already been a greater number of volunteers from the South than from the North," Dr. Lahey pointed out in connection with this idea, "and there will probably be areas where, as a result of greater volunteering, the number of doctors available for the community will be too limited. Should the present situation become even more urgent than it is, it is conceivable that many hardships may be worked in communities."

The warning to nurses: Nurses may "educate and legislate themselves out of the important place they have held in medicine and in the community" if the present trend away from service to the patients and toward higher and higher standards of requirements for entrance and graduation in nursing is not checked.

"It is really no exaggeration," Dr. Lahey declared, "to say that, with many of the personal attentions to patients delegated to ward maids, the real art of nursing can be lost to the nursing profession."

The shortage of trained, registered nurses, increased by military demands, and the relatively high cost of nursing for patients suggests that practical nurses will have to be used to break the impending bottleneck.

Science News Letter, June 14, 1941

Prime Defense Needs

"THE PRIMARY need in the present emergency is an increase in the number of physicians and engineers qualified in industrial health and medicine and their further training in the requisites for control of the hazards of war industries," Dr. Irvin Abell, Louisville, Ky., declared. Dr. Abell is chairman of the health and medical committee of the Federal Security Agency as well as of the A. M. A. medical preparedness committee.

Even in peace time new industrial operations generally bring fresh hazards to the workers' health which challenge industrial medical and health facilities. War industries have their special health problems and the great expansion at high speed of industries under the defense program greatly increases the job of caring for the health of the employees so vitally needed in these industries.

Science News Letter, June 14, 1941

Bandage Shortage Threat

A THREATENED shortage of surgical instruments, bandages and medical supplies was revealed by Major

★★★★★★★★★★★★★

WYOMING

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393A

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You get two actual meteorite specimens certified to be actual fragments from the heavens such as can usually be viewed only in museums. You get some of the sand pulverized by the tremendous *impact* of one of the largest meteorites ever to hit the earth.

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You get an inkless fingerprinting outfit with material good for many impressions. Included are two purse fingerprint cards that may some time be useful to you in cashing a check, two official fingerprint record documents, and full experiment instructions, with information *how to classify* the arches, loops, whorls and composites in your own or any fingerprint.

SYNTHETIC RUBBER UNIT

You get a piece of rayon web treated with the magic plasticized poly-vinyl chloride which makes it waterproof. You get a piece of synthetic rubber made from oil, soap, natural gas and air. You get, for purposes of comparison, a piece of natural rubber. You get instructions for experiments with each of these products.

General James C. Magee, Surgeon General of the U. S. Army.

Probably the greatest problem has been in the procurement of stainless steel surgical instruments, he said. Manufacture of sterilizers and X-ray equipment has been handicapped because of the present shortage of basic materials and the necessity for priority ratings. In the rulings on aluminum and nickel, however, items required for the health of the nation have been given a moderately high preference rating.

Studies have been made of the use of substitutes for drugs and chemicals previously imported and in some instances stocks have been built up, notably of opium, mercury and quinine. The Agriculture Department is introducing and cultivating some of the botanicals domestically, he reported.

There are difficulties in the manufacture of surgical dressings, General Magee revealed, as a result of the heavy demands of the British government and the American Red Cross in addition to the increased requirement of our own forces.

"There are sufficient looms for the manufacture of the grey goods, but due to the fact that these same looms may be used in the manufacturing of more costly and lucrative textiles, the production has not reached the adequacy we desire," he said."Bleachery capacity has also been one of the bottlenecks adversely affecting this production."

Science News Letter, June 14, 1941

Plasma at Lower Cost

TWO new methods of drying the hundred million quarts of blood plasma for treating shock, said to be vitally needed for national defense, were announced.

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FOR AIR RAIDS

This "blackout light" for street illumination was recently demonstrated to a group of public utility experts. The reflector, shaped like an admiral's hat, prevents upward strays of light, so that it will be invisible to bombing planes. The lamp itself is a 3-watt argon lamp which gives off both visible and invisible light. The former is only about one candlepower, but the latter may be used in conjunction with signposts, etc., painted with fluorescent materials that glow under the ultraviolet rays. The glow would not, however, be bright enough to be visible at a distance, from an enemy plane, for example. (General Electric.)

Cellophane sausage casings, the kind used in preparing "skinless" frankfurters and other sausages, feature the blood plasma drying method of Dr. Frank Hartman of the Henry Ford Hospital, Detroit. The blood is collected directly into these casings, which have previously been steam sterilized. After the red blood cells have settled to the bottom this part of the casing is tied off.

The rest, containing the plasma, is attached to the spokes of two wheels and revolved in an air-conditioned cabinet. The water from the plasma seeps through the cellophane casing and evaporates, leaving the light brown, flaky dried plasma, which can be redissolved in five minutes when the doctor is ready to give it to a patient in shock.

This method is said to be only about half as expensive as other methods of collecting and drying blood plasma. Between 45 and 50 liters (48 to 52 quarts) can be dried in 24 hours in any large hospital. For mass production, this amount could be greatly increased by using an air-conditioned room instead of the small cabinets.

With this method, the red blood cells can be saved and used, as the British are now doing, to prepare anemic patients for operation. This gives double usefulness to every pint of blood collected and cuts the price of the dried plasma in half, Dr. Hartman estimates.

Even simpler and less expensive, and well adapted to small hospitals, is the plasma drying method developed by Dr. Samuel B. Harper and A. E. Osterberg of the Mayo Clinic. With $25 worth of ordinary laboratory equipment and the part time services of a technician, their method can be used to produce instantly soluble dried blood plasma. Their method consists simply of distilling the plasma in vacuum at a temperature slightly above normal body temperature.

For large scale production of dried blood plasma, Dr. Harper investigated the process used commercially by manufacturers of dried milk. He found that this method of spraying large quantities of milk into a big room to dry it could be easily and satisfactorily adapted to blood plasma drying.

Science News Letter, June 14, 1941

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ZOOLOGY

Camels Do Not Store Water In Either Hump or Stomach

SPREAD of the war into the "camel lands" of East and North Africa and Iraq has brought many thousands of camels into use, to supplement the faster but fuel-demanding motor trains. This in turn has brought to the fore certain physiological facts about camels, produced by recent research, which do not jibe with long-held notions about these ungainly, unruly but useful beasts of burden.

For one thing, a camel's hump is not composed of water, nor is it constructed of cellular spaces arranged for storing water. It is composed of solid fat. The only recorded analysis of a hump gave 80 pounds of fat; this is about one-fifteenth of the weight of a fully-grown animal. As the metabolism, or burning in the body, of one pound of fat gives rise to about a pound of water, the fat in the hump is the equivalent of 10 gallons of water when the camel draws upon its hump for food.

It is widely believed that the camel stores water in two pouches which rise out of the animal's main stomach. One authority—the author of the only book ever written about the management of camels—regards this as a fable, and, on the basis of post-mortem examinations, believes that the pouches serve to moisten the food which is to be masticated during rumination. The water they contain is thus derived from the general circulation, as saliva is, and does not represent a special store.

The camel's normal reserve of liquid water seems in fact to be stored all over its body, just as is the case with other animals, but the camel can store water in the tissues underlying its skin. The extent of the water reserve in the camel depends largely upon the plentifulness of the supply of salt. A camel which has endured a long march without much food or water will plump up remarkably if given water and salt.

When deprived of salt camels given fresh water to drink may develop "mad staggers", which seems to be simply water intoxication. Camels can thus get drunk on pure water. They can also suffer from getting too much salt, but normally if they cannot graze on salt-bearing vegetation they must be given salt with their fodder.

Many curious facts about camels are given in a new publication, "The Feeding of Camels", compiled by I. Leitch, recently issued by the Imperial Bureau of Animal Nutrition, Aberdeen, Scotland. The subject of this treatise is the African or Arabian camel, of which there are nearly half a million in the Anglo-Egyptian Sudan, nearly a million in India, a million and a half in British Somaliland, and some in Australia and Egypt. Most of the remaining million and a half of the world's camels are of the two-humped or Bactrian type peculiar to Asia, about which nobody has yet written a book.

Science News Letter, June 14, 1941

FOOTPRINTS IN ROCK

Footprints of undoubted human beings, and not very ancient ones at that, were found imprinted in solid stone on the outskirts of the city of Managua, Nicaragua, recently by F. B. Richardson of the Carnegie Institution of Washington. The secret of the apparent mystery is a simple one: natives of the region, fleeing from a volcanic eruption somewhere between 5,000 and 2,000 years ago, crossed a fresh mud flow, which subsequently was buried in cinders from the same or an immediately subsequent eruption, and hardened to stony consistency. The imprints show that the persons who made them were walking, not running, and suggest also that they were carrying heavy burdens—probably household gear or provisions which these fugitives were saving from this long-forgotten American Pompeii.

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Additional Reviews On Page 384

BIOGRAPHY

"NOBLE FELLOW"; WILLIAM STARLING SULLIVANT—Andrew Denny Rodgers III —*Putnam,* 361 p., illus., $3.50. Perhaps because he was interested particularly in mosses rather than birds, Sullivant has not received the popular attention that has been showered of late upon Audubon. Yet he merits high recognition (and indeed has it from botanists at least) as this country's great pioneer in the study of a class of plants of much greater ecological importance than their humble stature might at first suggest. The author has done full justice to his subject, in a thoroughly documented, well illustrated work that must have required no end of painstaking research.

Science News Letter, June 14, 1941

MEDICINE—BIBLIOGRAPHY

PEDIATRIC BIBLIOGRAPHY—A. Graeme Mitchell—*Society for Research in Child Development, Natl. Research Council,* 119 p., 75c. (Monographs of the Society for Research in Child Devlopment, Vol. VI, No. 1, Serial No. 27)

Science News Letter, June 14, 1941

ORNITHOLOGY

BIRD HOUSES, BATHS AND FEEDING SHELTERS, How to Make and Where to Place Them (3d ed.)—Edmund J. Sawyer—*Cranbrook Inst. of Science,* 35 p., diagrams, 20c. It is to be hoped that the Cranbrook Institute will never permit this useful little publication to go out of print.

Science News Letter, June 14, 1941

SPORTS

THE WOMEN'S DIVISION, NATIONAL AMATEUR ATHLETIC FEDERATION—Alice Allene Sefton—*Stanford Univ. Press,* 88 p., $2. Sixteen years of progress in athletics for girls and women, 1923-1939.

Science News Letter, June 14, 1941

MEDICINE

HOSPITAL FORMULARY AND COMPENDIUM OF USEFUL INFORMATION—*Univ. of California Press,* 270 p., $2.

Science News Letter, June 14, 1941

GEOGRAPHY—JUVENILE

LETTERS FROM GUATEMALA — Delia Goetz, 56 p.; KIMBI, INDIAN OF THE JUNGLE—Henry Lionel Williams, 47 p.; AROUND THE CARIBBEAN—Nora Burglon, Thelma Glazer and E. Mark Phillips, 48 p.; EXPLORING THE JUNGLE—JoBesse McElveen Waldeck, 56 p.; THE GAUCHO'S DAUGHTER—Katherine G. Pollock, 56 p.; RICHES OF SOUTH AMERICA—V. Wolfgang von Hagen, 56 p.; BOYS OF THE ANDES—Alice Desmond, Alida Malkus and Ednah Wood, 56 p.; ALONG THE INCA HIGHWAY—Alida Malkus, 56 p., *Heath,* illus., 32c. each. Befitting the growing interest in Latin American neighbors, here is a series of school readers, listed in order of difficulty, acquainting the pupil with countries, customs, human types, and products of the New World. Young America may even try its tongue on Spanish words, for some of the books introduce a few and have a couple of pages of glossary with pronunciations at the back.

Science News Letter, June 14, 1941

TECHNOLOGY—DIRECTORY

INDUSTRIAL RESEARCH LABORATORIES OF THE UNITED STATES INCLUDING CONSULTING RESEARCH LABORATORIES (7th ed.)—Callie Hull, comp.—*National Research Council,* 372 p., $3.50. Increasingly important in these days of national defense, the seventh edition of this directory is being published somewhat earlier than usual, concurrently with a survey of research in industry undertaken by the National Research Council (*Research—A National Resource. II. Industrial Research*). Four indexes are included: subject of research, geographical distribution, personnel mentioned in the directory, and serial publications of the laboratories listed.

Science News Letter, June 14, 1941

HORTICULTURE

HORTUS SECOND, A Concise Dictionary of Gardening, General Horticulture and Cultivated Plants in North America (rev. ed.)—L. H. Bailey and Ethel Zoe Bailey, comp.—*Macmillan,* 778 p., $12. A new and thoroughly revised edition of the Baileys' famous garden dictionary. For the serious gardener who cannot get the three-volume Cyclopedia of Horticulture, this one-volume condensation is a "must".

Science News Letter, June 14, 1941

TECHNOLOGY

RUBBER AND ITS USE—Harry L. Fisher —*Chemical Pub. Co.,* 128 p., illus., $2.25. With the present increasingly great importance of rubber as a strategic material, this little book by a man who has had long experience with rubber as a research chemist is particularly timely. Synthetic as well as natural rubbers are discussed.

Science News Letter, June 14, 1941

AERONAUTICS

WINGED WARFARE—H. H. Arnold and Ira C. Eaker—*Harper,* 265 p., illus., $3. With aerial warfare now looming so important abroad and at home as well, this book comes at a particularly opportune time. General Arnold is the chief of the U. S. Army Air Corps, while Col. Eaker commands the 20th Fighter Group of the G. H. Q. Air Force; so they speak with the highest authority. All phases of the problem are discussed, in a clear and interesting manner, and one chapter presages the fighting plane of tomorrow in telling of aviation development and research. They forecast smaller and faster fighters than those of today with speeds of 450 miles per hour and even more. The 40,000 pound flying fortress, it is predicted, will grow into a giant of 200,000 pounds with an operating range of 5,000 miles.

Science News Letter, June 14, 1941

AERONAUTICS

INSTRUMENT FLYING—P. V. H. Weems and Charles A. Zweng—*Weems System of Navigation,* 321 p., illus., $4. Two leading authorities on air navigation have here produced a book which should prove of immense value to the thousands who are learning to fly, covering, as it does, the operation of principal instruments, use of federal aids to air navigation, such as the radio beacons, meteorological elements, Civil Air Regulations, etc. In an appendix are given typical questions in subjects on which the pilot is examined, together with answers. The book is based on "Instrument Flying" by Howard Stark, which went out of date following his death in 1936.

Science News Letter, June 14, 1941

BOTANY

PLANT ECOLOGY (3rd ed.)—W. B. McDougall—*Lea & Febiger,* 285 p., illus., $3. A new edition of a well-known college text.

Science News Letter, June 14, 1941

HORTICULTURE

SCIENCE IN THE GARDEN—H. Britton Logan and Jeane-Marie Putnam—*Duell, Sloan and Pearce,* 265 p., $2.50. An unusual garden book, in that it not only tells you what to do but explains why you do it. Some interesting experiments are outlined, in such things as effects of light, use of vitamin B_1, and soilless gardening.

Science News Letter, June 14, 1941

•First Glances at New Books

Additional Reviews On Page 383

HUMOR

OLD BILL & SON—Bruce Bairnsfather and Ian Dalrymple—*McKay,* 269 p., illus., $2. Bairnsfather's immortal walrus-faced veteran manages to wangle himself back into uniform and is off to the wars again, this time trailing behind a somewhat bumptious offspring who (despite his sire's grumbling doubts) will probably make a pretty good soldier.

Science News Letter, June 14, 1941

BIOLOGY

PROTOZOA IN BIOLOGICAL RESEARCH—Gary N. Calkins and Francis M. Summers, eds.—*Columbia Univ. Press,* 1148 p., illus., $10. This symposium, by a group of this country's leading protozoölogists, should do a great deal to stimulate and guide further research in a fascinating and highly important subject. Emphasis is placed mainly on the reactions and physiology of protozoa, although anatomical phases are not neglected. A useful feature is the bibliography appended to each section.

Science News Letter, June 14, 1941

AERONAUTICS

CIVIL AIR DEFENSE—Augustin M. Prentiss—*Whittlesey House,* 334 p., $2.75. Everyone hopes that the suggestions of Col. Prentiss will not be needed in this country, for if they are, it may then be too late to apply them. Detailed instructions are given, based largely on British practice.

Science News Letter, June 14, 1941

MILITARY SCIENCE—AERONAUTICS

FIRST BLOOD FOR THE R. A. F.—Charles Gardner—*McKay,* 272 p., illus., $2.50. An English book which tells of the gallant work of the Advanced Air Striking Force of the R. A. F. in France in the days before Dunkirk.

Science News Letter, June 14, 1941

AERONAUTICS

SO YOU'RE GOING TO FLY—James L. H. Peck—*Dodd, Mead,* 240 p., illus., $2.50. The boy, girl, or adult, who looks longingly in the air when a plane passes will enjoy this account of aviation training from the early instruction and first flight to modern aerial warfare.

Science News Letter, June 14, 1941

SOCIAL SCIENCE

SOCIAL SCIENCE PRINCIPLES IN THE LIGHT OF SCIENTIFIC METHOD WITH PARTICULAR APPLICATION TO MODERN ECONOMIC THOUGHT—Joseph Mayer—*Duke Univ. Press,* 573 p., $4. This is a comprehensive treatment of what is called broadly "social science" with particular emphasis upon its relations to the so-called "natural" sciences and mathematics. The opening section considers scientific method in relation to social study, particularly whether the techniques so successful in physics, chemistry, biology, medicine, etc., can be applied to economics, political science, sociology, etc. Other sections consider cost and utility theory, value concepts, economic fundamentals, and conclusions that can be drawn applicable to present conditions.

Science News Letter, June 14, 1941

MARINE BIOLOGY

EL MAR ACUARIO DEL MUNDO—Enrique Rioja—*Estela, Editorial Seneca, Varsovia 35 A, Mexico City,* 405 p., Paper, $2.10; Cloth, $2.50. An excellent account of sea life done for the layman and in the style of the early naturalists who found nature romantic. In Spanish.

Science News Letter, June 14, 1941

HISTORY

A NEW DOCTRINE FOR THE AMERICAS—Charles Wertenbaker—*Viking Press,* 211 p., $2. A review by the foreign news editor of Time Magazine of the events which have led to the good neighbor policy and the way it has been given practical form during the past few years. It gives a clear exposition of the problems plaguing the American nations in their relations with each other.

Science News Letter, June 14, 1941

EDUCATION

THE AMERICAN CITIZENS HANDBOOK—Arranged by Joy Elmer Morgan—*Natl. Education Ass'n,* 366 p., illus., $1. Two and one-half million young men and women in the United States reach voting age each year. This book is dedicated to them. Contained in it are essential facts about citizenship, patriotic poetry and song, great American personalities, famous documents and addresses, and useful information that everyone should know. This is a National Education Association activity.

Science News Letter, June 14, 1941

GENERAL SCIENCE

A STUDY-BOOK FOR SCIENCE PROBLEMS 3—Wilbur L. Beauchamp, John C. Mayfield and Joe Young West—*Scott, Foresman,* 316 p., 76c. Companion to school text by same author.

Science News Letter, June 14, 1941

CHEMISTRY

THE CHEMISTRY OF POWDER AND EXPLOSIVES, Vol. I — Tenney L. Davis — *Wiley,* 216 p., illus., $2.75. This book will prove a valuable account of the following phases of explosives: general properties, black powder, fireworks, and aromatic nitro compounds (in which TNT and similar high explosives are included). Because of the great present interest in explosives, these chapters were published as Vol. 1, instead of waiting until the completion of the entire work. The second volume will cover other explosives. Though intended primarily for chemists, and as a text for seniors and graduate students at M. I. T., the book should not prove too difficult for anyone with a good general knowledge of chemistry.

Science News Letter, June 14, 1941

GENERAL SCIENCE

NEW WORLDS IN SCIENCE—Harold Ward, ed.—*McBride,* 670 p., $3.50. This anthology includes selections from some 34 notable contemporary books and articles on science as related to us and the world. Skillfully selected, the pieces in the first section fit together to build a biological view of the world; in the other section they show the impact of energy upon man, the world and the universe. Anyone will find stimulating reading in this panoramic compilation.

Science News Letter, June 14, 1941

AERONAUTICS

YOUTH IN AVIATION—Air Youth of America — *Appleton-Century,* 265 p., illus., $2.50. A manual for leaders telling how to organize and conduct junior aviation programs.

Science News Letter, June 14, 1941

ENGINEERING

A GOOD MECHANIC SELDOM GETS HURT —Herman R. Graman — *Amer. Tech. Soc.,* 94 p., illus., 50c. A useful manual on safety in the machine shop.

Science News Letter, June 14, 1941

PHYSICS

FLUORESCENT LIGHT AND ITS APPLICATIONS—H. C. Dake and Jack De Ment—*Chemical Pub. Co.,* 256 p., illus., $3. With the growing importance of fluorescence as a means of general illumination, as well as for spectacular effects, this treatise should be very popular as an elementary introduction to the entire subject.

Science News Letter, June 14, 1941